

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/32576

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G01N 31/22; G01N 33/44; G06K 19/06; B42D 15/10; B41M 3/14  
US CL : 436/2, 5, 8, 85, 172, 518, 531; 235/491; 283/72, 74, 79, 85, 91-92, 95; 427/7,  
According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 436/2, 5, 8, 85, 172, 518, 531; 235/491; 283/72, 74, 79, 85, 91-92, 95; 427/7,

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5,492,444A (RITTENBURG et al) 24 August 1999, see entire document.	1,11,16-18,20-22
Y		2-7,10,12,19,23-29
Y	US 5,421,869 A (GUNDJIAN et al) 06 June 1995, see entire document.	1-7,11-12,16-18,20-29
Y	US 5,587,273 A (YAN et al) 24 December 1996, see entire document.	2-7,24-29
Y	US 2003/0129092 A1 (MURRAY) 10 July 2003, see entire document.	2-7,24-29
Y	Jenkins, A. L. et al, "Polymer-Based Lanthanide Luminescent Sensor for Detection of the Hydrolysis Product of the Nerve Agent Soman in Water" Analytical Chemistry 15 January 1999, Vol. 71, No. 2, pages 373-378, see entire document.	2-7,24-29
Y	Murray G. M. et al, "Imprinted polymer sensors for contamination detection", roceedings of SPIE 2001 Vol. 4206, pages 131-139, see entire document.	2-7,24-29

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

### \* Special categories of cited documents:

"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E"	earlier application or patent published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family
"P"	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

02 September 2005 (02.09.2005)

Date of mailing of the international search report

25 OCT 2005

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Facsimile No. (703) 305-3230

Authorized officer

Arlen Soderquist

Telephone No. (571) 272-1700

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US04/32576

## C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Sekine, T. et al, "Studies of the liquid-liquid partition systems. IV. Solvent extraction study of europium(III) adduct chelate complexes with six acetylacetone derivatives and tributyl phosphate" Bulletin of the Chemical Society of Japan, December 1965, Vol. 38, No. 12, pages 2087-2094, see entire document.	2-7,24-29
Y	US 4,374,120 A (SOINI et al) 15 February 1983, see entire document.	2-7,24-29
Y	US 5,006,503 A (BYERS et al) 09 April 1991, see entire document.	2-7,24-29
Y	US 5,442,021 A (HEILIGER) 15 August 1995, see entire document.	2-7,24-29
Y	US 4,923,908 A (LOSTUMO et al) 08 May 1990, see entire document.	10,19
Y	US 5,990,479 A (WEISS et al) 23 November 1999, see entire document.	12,23
A	US 4,736,425 A (JALON) 05 April 1988.	1-31
A	US 5,005,873 A (WEST) 09 April 1991.	1-31
A	US 5,329,127 A (BECKER et al) 12 July 1994.	1-31
A	US 5,696,240 A (VALLARINO et al) 09 December 1997.	1-31

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/32576

## Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of any additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

- Remark on Protest
- |                          |   |
|--------------------------|---|
| <input type="checkbox"/> | The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.   |
| <input type="checkbox"/> | The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation. |
| <input type="checkbox"/> | No protest accompanied the payment of additional search fees.   |

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US04/32576

## Continuation of B. FIELDS SEARCHED Item 3:

EAST search in USPAT file and STN search in CA file

search terms: diketone, lanthanide, lanthanum, cerium, praseodymium, neodymium, promethium, samarium, europium, gadolinium, terbium, dysprosium, holmium, erbium, thulium, ytterbium, lutetium, dithiocarbox?, trithiocarb?, benzyl iodide, mip, molecu?, imprint?, polymer, molecule, template, marking, tagging, labeling, track\$, identif\$, authenticat\$, fluorescen\$, luminescen\$, chromophor\$, lanthan\$, europi\$, bind\$, chelat\$, molecu\$, imprint\$, product, material, label, tag, group, identif?, verif?, authenticat?, lantahn?, europ?, track?, security, trifluoromethyl?, rare earth, eu, 1 3 butandio?, 4 4 4 trifluor?, naphth?, methox?, etheny?, mark?, link?